

IN THE CLAIMS:

Claims

1. (Currently Amended) Power supply apparatus for supplying a direct voltage to a load ~~(2)~~ that is connected to a first terminal ~~(3)~~, the supply apparatus comprising:

a rechargeable battery ~~(4)~~ for connection to a second terminal ~~(5)~~, and a voltage generator ~~(6)~~ for recharging said battery ~~(4)~~ and supplying power to said load; ~~(2)~~,

~~characterised by~~ first control means ~~(20, 16)~~ for controlledly supplying current from said voltage generator ~~(6)~~ to said first terminal ~~(3)~~ so as to control supply of current from said voltage generator ~~(6)~~ to said load ~~(2)~~ and for preventing reverse flow of current from said first terminal ~~(3)~~ to said voltage generator; ~~(6)~~, and

second control means ~~(21)~~ for controlledly supplying current between said first ~~(3)~~ and second ~~(5)~~ terminals so as to control supply of current from said voltage generator ~~(6)~~ through said first control means ~~(20, 16)~~ to said battery ~~(4)~~ and from said battery to said load ~~(2)~~.
2. (Currently Amended) Power supply apparatus as claimed in claim 1, wherein said first and second control means ~~(20, 16; 21)~~ are arranged to present selectively a high impedance state ~~(23)~~, a low impedance state ~~(26)~~ or a controlled impedance state ~~(29, 32)~~, said controlled impedance state ~~(29, 32)~~ controlling the magnitudes of the currents supplied by said first and second control means ~~(20, 16; 21)~~ respectively.
3. (Currently Amended) Power supply apparatus as claimed in claim 2, wherein said second control means ~~(21)~~ is responsive to the presence of a low battery voltage at said second terminal ~~(5)~~ to present said controlled impedance state between said first ~~(3)~~ and second ~~(5)~~ terminals so as to apply a controlled voltage at said first terminal ~~(3)~~ greater than said low battery voltage.

4. (Currently Amended) Power supply apparatus as claimed in claim ~~2, or 3~~ wherein said first and second control means ~~(20, 16; 21)~~ are responsive to a battery voltage less than full charge to present said controlled impedance state so that said voltage generator ~~(6)~~ supplies current both to said battery ~~(4)~~ and to said load ~~(2)~~.
5. (Currently Amended) Power supply apparatus as claimed in ~~any of claims~~ claim 2 to 4 wherein said first control means ~~(20, 16)~~ is responsive to a battery voltage substantially equal to full charge to present said high impedance state so as to disconnect said voltage generator ~~(6)~~ from said battery ~~(4)~~ and said load ~~(2)~~.
6. (Currently Amended) Power supply apparatus as claimed in ~~any of claims 2 to 4~~ claim 3 wherein said second control means ~~(21)~~ is responsive to a battery voltage substantially equal to full charge to present said high impedance state so as to disconnect said battery ~~(4)~~ from said voltage generator ~~(6)~~ and said load ~~(2)~~.
7. (Currently Amended) Power supply apparatus as claimed in ~~any of claims 2 to 6~~ claim 2 wherein said control means comprises field-effect transistors and means ~~(12)~~ for controlling said field-effect transistors to present selectively said high impedance state, said low impedance state or said controlled impedance state.
8. (Currently Amended) Power supply apparatus as claimed in claim 7 wherein said first control means ~~(20, 16)~~ comprises at least a first one ~~(21)~~ of said field-effect transistors connected in series between said voltage generator ~~(6)~~ and said first terminal ~~(3)~~ for controlling supply of current from said voltage generator ~~(6)~~ to said first terminal ~~(3)~~ and a second element ~~(16)~~ connected in series between said voltage generator ~~(6)~~ and said first terminal ~~(3)~~ for preventing reverse flow of current from said first terminal ~~(3)~~ to said voltage generator ~~(6)~~.
9. (Currently Amended) Power supply apparatus as claimed in claim 8 wherein said second element ~~(16)~~ comprises a second one of said field-effect transistors.
10. (Currently Amended) Portable radio communication apparatus comprising a communication module and power supply apparatus as claimed in ~~any preceding~~ claim 6 for supplying power to said communication module as said load.

11. (New) Power supply apparatus for supplying a direct voltage to a load that is connected to a first terminal, the supply apparatus comprising:

a voltage generator for recharging a rechargeable battery connected to a second terminal and for supplying power to said load;

first control circuit for controlledly supplying current from said voltage generator to said first terminal so as to control supply of current from said voltage generator to said load and for preventing reverse flow of current from said first terminal to said voltage generator; and

second control circuit for controlledly supplying current between said first and second terminals so as to control supply of current from said voltage generator through said first control circuit to the battery and from the battery to said load.

12. (New) Power supply apparatus as claimed in claim 11, wherein the first control circuit includes a first control element and a second control element.

13. (New) Power supply apparatus as claimed in claim 12, wherein the first control element is in series with the second control element.

14. (New) Power supply apparatus as claimed in claim 12, wherein the first control element includes a first transistor and the second control element includes a second transistor.

15. (New) Power supply apparatus as claimed in claim 11, wherein the second control circuit includes a control element.

16. (New) Power supply apparatus as claimed in claim 15, wherein the control element includes a transistor.

17. (New) Power supply apparatus as claimed in claim 15, wherein the control element includes a diode.

18. (New) Power supply apparatus as claimed in claim 11, wherein said first and second control circuit are arranged to present selectively a high impedance state, a low impedance state or a controlled impedance state, said controlled impedance state controlling the magnitudes of the currents supplied by said first and second control circuit respectively.

19. (New) Power supply apparatus as claimed in claim 18, wherein said second control circuit is responsive to the presence of a low battery voltage at said second terminal to present said controlled impedance state between said first and second terminals so as to apply a controlled voltage at said first terminal greater than said low battery voltage.

20. (New) Power supply apparatus as claimed in claim 18, wherein said first and second control circuit are responsive to a battery voltage less than full charge to present said controlled impedance state so that said voltage generator supplies current both to the battery and to said load.